

CM6136

Single-Channel Transient Voltage Suppressor

Product Description

ON Semiconductor's CM6136 is an *Application Specific Integrated Passive™ (ASIP™)* component in a 2 x 2, 4-bump, 0.4 mm pitch, CSP form factor. This device is designed for:

- Fuse
- Transient Voltage Suppression (TVS)
- Electrostatic Discharge Protection
- Electrical Overstress Protection

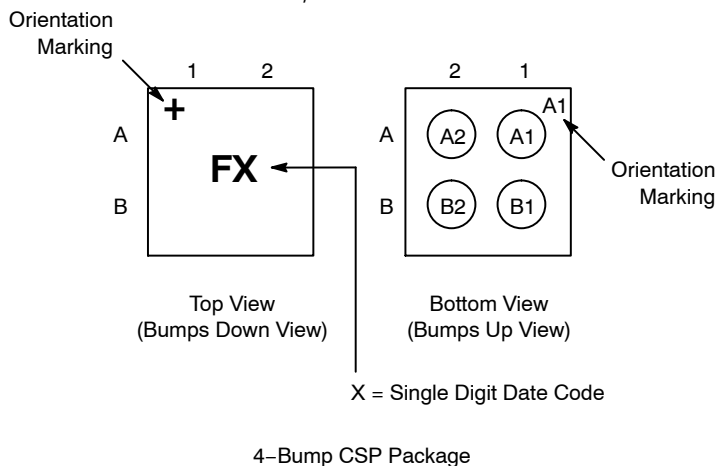
Features

- 4-Bump, 0.8 mm X 0.8 mm Footprint Chip Scale Package (CSP)
- These Devices are Pb-Free and are RoHS Compliant

Table 1. PIN DESCRIPTIONS

4-bump CSP Package	
Pin	Description
A1	Fuse Terminal 1
A2	TVS Channel / Fuse Terminal 2
B1 & B2	Device Ground

PACKAGE / PINOUT DIAGRAMS



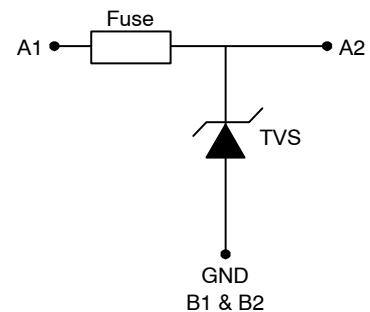
ON Semiconductor®

<http://onsemi.com>



**WLCSP4
CP SUFFIX
CASE 567CA**

ELECTRICAL SCHEMATIC



MARKING DIAGRAM



F = CM6136
X = Single Digit Date Code

ORDERING INFORMATION

Device	Package	Shipping†
CM6136	WLCSP4 (Pb-Free)	10,000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

CM6136

ELECTRICAL SPECIFICATIONS AND CONDITIONS

Table 2. ABSOLUTE RATINGS

Parameter	Rating	Units
Failing to nonconductive, I^2t – from A1 pin to device ground (Maximum I_{PP} value using 10/1000 μ s pulse). See Notes 1 and 2.	4	A
Failing to nonconductive, I^2t – from A2 pin to device ground (Maximum I_{PP} value using 10/1000 μ s pulse). See Notes 1 and 2.	50	A

1. The device must not burn to open-circuit, when the value is below maximum I_{PP} .
2. This parameter is characterized at 25°C using an ON Semiconductor-specific test board.

Table 3. PARAMETERS AND OPERATING CONDITIONS

Parameter	Rating	Units
Storage Temperature Range	-55 to +150	°C
Operating Temperature Range	-30 to +85	°C

Table 4. ELECTRICAL OPERATING CHARACTERISTICS (Note 1)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
R	Resistance A1 – A2	B1 and B2 floating (Note 2)			50	m Ω
R _{OPEN}	Resistance after open fuse	B1 and B2 floating	1			M Ω
t _{FUSE}	Fusing time	B1 and B2 floating; I = 5 A (Note 3)			100	ms
t _{LIFE}	Fuse life time	B1 and B2 floating; I = 2 A (Notes 3, 4 and 9)	4000			Hours
I _{OFF}	Stand-off quiescent current	From A1 pin to B1 and B2 pins; Stand-off voltage V _{OFF} = 12 V			100	nA
V _{BR}	Break down voltage	From A1 pin to B1 and B2 pins; Break down current I _{BR} = 20 mA (Note 6)	15.5			V
V _{CL}	Clamping voltage during transient	From A1 pin to B1 and B2 pins; Clamping current I _{CL} = 1 A (Notes 6 and 7)			19.5	V
V _F	Forward voltage	From A1 pin to B1 and B2 pins; Forward current I _F = 850 mA			1.3	V
C _{L1}	Line capacitance	V _{BIAS} = 0 V		190		pF
C _{L2}		V _{BIAS} = 5 V	73	92		pF
V _{ESD}	ESD protection peak discharge Voltage at A1 pin or A2 to B1 and B2 a) Contact Discharge per IEC 61000-4-2 standard b) Air Discharge per IEC 61000-4-2 standard	(Note 8)	\pm 30			kV
f _C	Minimum attenuation Freq = 80 MHz – 1 GHz Freq = 1 – 4 GHz	R _{SOURCE} = R _{LOAD} = 50 Ω		8 20		dB

1. All parameters specified for T_A = 25°C unless otherwise noted. Characterization data for DC parameters is taken from -30°C to 85°C.
2. This parameter is measured using low current to avoid self-heating.
3. These parameters are characterized using ON Semiconductor-specific test boards.
4. Fuse is considered failed when its resistance is higher than 1 Ω .
5. Cumulative distribution of V_{BR} between 15.5 V and 16.0 V is about 4.5%.
6. Transient: 8 x 20 μ s current pulse.
7. Cumulative distribution of V_{CL} between 19.0 V and 19.5 V is about 4.5%.
8. Standard IEC 61000-4-2 with C_{Discharge} = 150 pF, R_{Discharge} = 330 Ω .
9. Fuse lifetime is extrapolated from Accelerated Life Test (ALT) at 125°C.

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RF CHARACTERISTICS

T_A = 25°C, 50 Ω Environment

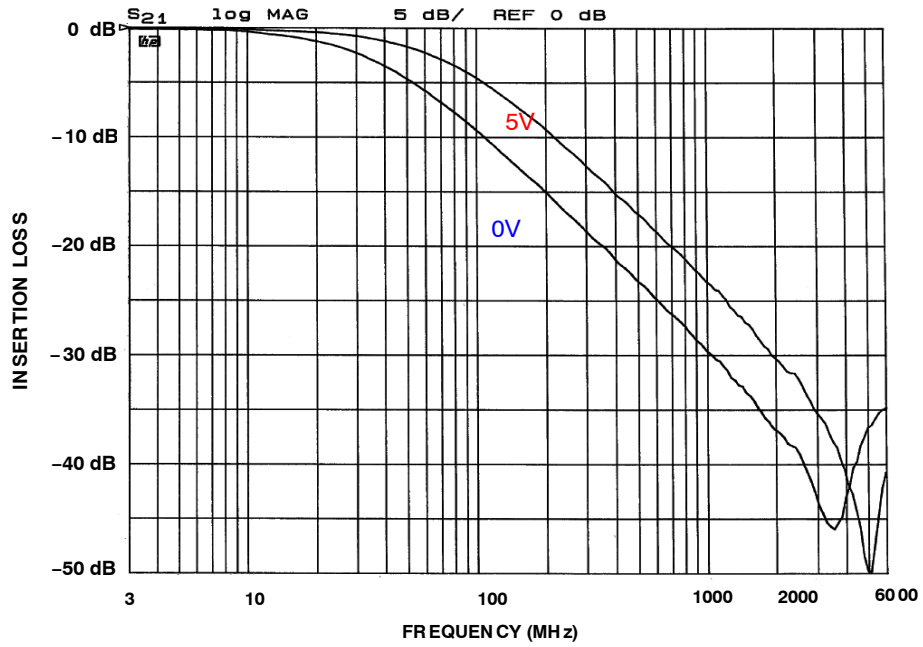
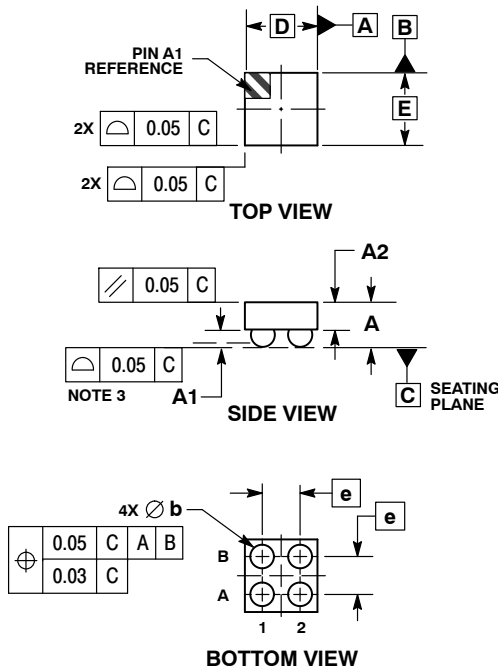


Figure 1. Insertion Loss (0 V and 5 V Bias)

CM6136

PACKAGE DIMENSIONS

WLCSP4, 0.8x0.8
CASE 567CA-01
ISSUE O

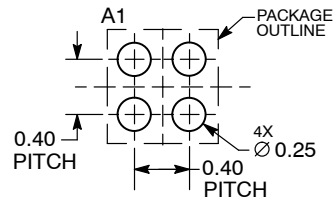


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.47	0.53
A1	0.17	0.24
A2	0.30 REF	
b	0.24	0.29
D	0.80 BSC	
E	0.80 BSC	
e	0.40 BSC	

RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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